

Rebuttals of SELC Reports

**Review of *Economic Analysis of I-73 and the Grand Strand Expressway Alternative*
(Miley & Associates Inc.)**

A few general comments regarding this report –while it stated that it addressed two studies, its focus was on the *Economic Impact of I-73 in South Carolina*, prepared by Chmura Economics & Analytics (Chumura report), commissioned by the Northeastern Strategic Alliance (NESA) . It alluded to the *Interstate 73 Final Environmental Impact Statement from I-95 to the Myrtle Beach Region*, Federal Highway Administration (FHWA). It did not mention the *Economic Impact Technical Memorandum* for either I-73 South or I-73 North, nor did it consider the *Interstate 73 Final Environmental Impact Statement and Section 4(f) Evaluation from I-95 to Future Interstate 74 in North Carolina* . The FHWA approval decisions were based upon the information within the two Environmental Impact Statements, which incorporated by reference these technical memoranda, not information contained within the Chmura report. . Both these memoranda include the methodology and assumptions by which their conclusions were derived. Little attention appears to have been paid to the economic analyses contained within these documents.

This review is based upon issues raised in the Miley report that were addressed in the two I-73 EISs and the two Technical Memoranda and only addresses comments based upon the Miley analysis of the Chmura report when materials in the other Technical Memoranda provide specific information relative to the issue that was raised. For example, the statement on page 4 of the Miley report:

The assertion that I -73 will have widespread economic development benefits is largely based on the report by Chmura Economics which estimated there would be thousands of jobs created as a result of the road's construction as of the year 2030.

appeared to ignore the information contained within the EISs and technical memoranda that provides information regarding job creation and other economic benefits.

The Miley report based its costs and traffic assumptions for the upgrade of the SC 38/US 501 corridor on values contained in a report titled *Grand Strand Expressway* prepared by Smart Mobility. The *Grand Strand Expressway* document makes statements which are unsupported by data or backed up by any analysis that has been provided. For example, on page 3 of the Miley report it states:

Upgrading the GSX between I -95 and SC 22 has been shown to be a viable transportation alternative to the proposed I-73 interstate.

Although that claim is based upon the Smart Mobility study, there is insufficient evidence to support it in the Smart Mobility report.

The Miley report includes apparent misinterpretations regarding the materials in the EISs. For example, page 14 of the Miley report contains a graphic which is represented as indicating traffic congestion when in fact it illustrates travel time from the eastern terminus of I-73 at its intersection with US 17:

As the following figure indicates, the areas of severe traffic congestion (indicated by the yellow and red areas) are all east of SC 22.

It is appropriate to mention some of the economic benefits of I-73 that were discussed in the EISs and associated Technical Memoranda but were not included in the Miley report. These included:

- Travel efficiency benefits from I-73 South - \$2 billion increase in Gross Regional Product between 2015 and 2030 in the study area. An increase in personal income of \$36 million (in Year 2000 dollars) and 2,240 jobs added in Year 2030 alone, per *Interstate 73 Final Environmental Impact Statement from I-95 to the Myrtle Beach Region*.
- Strategic development benefits (resulting from improved accessibility and connectivity) from I-73 South - \$51.8 million in increased annual income and 1,775 jobs, per *Interstate 73 Final Environmental Impact Statement from I-95 to the Myrtle Beach Region*.
- Travel efficiency benefits from I-73 North - \$695 million cumulative increase in Gross Regional Product and \$256 million in personal income between 2015 and 2030 (in 2007 present dollar value) and 787 jobs added in 2030 alone, per *Interstate 73 Final Environmental Impact Statement from I-95 to Interstate 74 in North Carolina*.
- Strategic development benefits from I-73 North - \$76 million in Gross Regional Product, \$27.3 million in increased annual income and 558 jobs added for 2030 alone, per *Interstate 73 Final Environmental Impact Statement from I-95 to Interstate 74 in North Carolina*.

The remainder of this review addresses specific points raised in the Miley report on a point by point basis.

Introduction - page 8, Miley report

4th paragraph

Our overall goal is to determine which alternative, GSX, I-73 or no-build, generates the most value (i.e., travel efficiency) for the least cost to taxpayers. We note that whether the proposed I-73 project, the SC 38/US 501 upgrade, or a no-build option is selected, the Myrtle Beach area will see equal non-transportation related economic impacts.

Response: The overall goal of the Miley report is not the same as the purpose and need for I-73.

The purpose of the proposed project is to provide an interstate link between I-95 and the Myrtle Beach region to serve residents, businesses, and tourists while fulfilling congressional intent in an environmentally responsible and community sensitive manner.

per *Interstate 73 Final Environmental Impact Statement from I-95 to the Myrtle Beach Region*, page 1-10.

The documentation for the traffic benefits attributed to the “GSX” is not in the Miley report or in the Smart Mobility report. The traffic data is incomplete and presented in a piecemeal

fashion. (refer to comments in this review (page 5) regarding page 12, 3rd paragraph of the Miley report).

Introduction - page 9, Miley report

1st full paragraph

We analyzed two studies of the proposed I-73; the Chmura Economics & Analytics *Economic Impact of I-73 in South Carolina and the Interstate 73 Final Environmental Impact Statement from I-95 to the Myrtle Beach Region (FEIS)*. (FEDERAL HIGHWAY ADMINISTRATION, 2009).

Response: The Chmura report and EIS may have been evaluated, but all economic analysis references are to the Chmura report, which was performed at the request of a separate, independent entity after the Records of Decision on both I-73 EISs were completed. No analysis of the Economic Impact Technical Memoranda for I-73 appears to have been performed. These documents were technical memoranda that were incorporated by reference into the EISs. As stated previously, the Chmura report is not part of SCDOT's documentation regarding I-73 and therefore the Department has not taken a position of endorsing or refuting information contained within that report.

2nd paragraph

Because the proposed I-73 corridor and GSX both terminate at SC 22, well northwest of the Grand Strand area, this leads us to conclude there will be no substantive variation in tourism impacts in the Myrtle Beach area among the alternatives. It is very doubtful that the proposed I-73 will be a primary factor in future Myrtle Beach tourism. Rather, demographics, the national economy, affordable housing, and the environment – including beach quality (Klein & Osleeb, 2010), sea level rise and tropical storms – will more likely shape the future of most coastal economies, including the Grand Strand.

Response: This is incorrect. SC 22 is to be incorporated as part of I-73 as stated on page 1-12 of the FEIS for I-73 South. The eastern terminus of I-73 will be at US 17 in Myrtle Beach.

The tourism benefits of I-73 were not included in the economic study done for the I-73 South or North EIS. As stated on page 2-42 of *Interstate 73 Final Environmental Impact Statement from I-95 to the Myrtle Beach Region*,

Because the forecasts presented in this report represent only two categories of the above-listed benefits (travel efficiencies and strategic development impacts), the results of this study should be considered as conservative estimates.

Tourism benefits would be in addition to the economic benefits quantified in the economic studies done as part of the evaluation in the EISs.

The study by Klein and Osleeb, *Determinants of Coastal Tourism: A Case Study of Florida Beach Counties*, was done

...to explore the cumulative impacts of beach quality on the local tourist economies of Florida counties.

It should be noted that the referenced study did include a discussion on accessibility of the beaches as an *element* of the attractiveness of the beach to tourists

To some degree, these tourists are attracted to Florida beaches based on the accessibility of the beach.” page 1151, Klein and Osleeb study.

I-73 was demonstrated to improve accessibility to Myrtle Beach by reducing travel time from both I-95 and from I-73/I-74 in North Carolina. Additionally, as more segments of I-73 are completed in North Carolina, Virginia, and West Virginia, access to Myrtle Beach from the Midwest will be improved as well.

Transportation Analysis - page 10, Miley report

2nd paragraph

In comparison, the report by Chmura Economics & Analytics, “Economic Impact of I-73 in South Carolina,” utilized the IMPLAN modeling system.⁶ IMPLAN is appropriate for estimating some impact scenarios, but it is a simplistic methodology for evaluating transportation systems. In fact, the TREDIS model incorporates the IMPLAN model, but builds and expands on that model to make it more appropriate for transportation applications.

Response: The I-73 Economic study used REMI and EDGE modeling to determine economic impacts for the EIS that was prepared by Wilbur Smith Associates. The Miley report compared only the methodology used in the Chmura report. The comparison is made between TREDIS, used in the Miley report and IMPLAN, used in the Chmura report. According to the National Cooperative Highway Research Program (NCHRP) report, *Best Practices in Using Programmatic Strategies in Statewide Transportation Plans*, by Wilbur Smith Associates,

Tools such as REMI Transight and TREDIS have attempted to convert transportation impacts into different mode-neutral economic impact projections.

REMI and TREDIS are both mentioned in that report as examples of tools that are available. Chmura used IMPLAN, I-73 utilized REMI and EDGE, and Miley used TREDIS. All of these economic models are recognized as viable tools for measuring economic impacts.

Benefit/Cost Analysis - Page 11, Miley report

1st paragraph

The I-73 Build returned a benefit/cost ratio of 0.26, while the SC 38/US 501 Build ratio was 1.4.⁷

Response: The methodology for the development of the B/C ratios is not given and therefore cannot be reviewed. The only information on the cost estimate for the SC 38/US 501 “G SX” alternative was a note on a table on page 11 of the Smart Mobility study that said,

Planning level costs based on typical unit costs for projects in North and South Carolina, not based on site specific engineering analysis.

There was no quantification of specific improvements listed that would be performed for the \$147 million, so there is no way to verify these costs.

Sensitivity Analysis of Benefit/Cost Analysis - Page 12, Miley report

1st paragraph

Because of the projected high speeds of SC 38/US 501, even without building new infrastructure (using Final Environmental Impact Statement (FEIS) inputs), the difference between build and no-build efficiency is minimal. Thus it does not provide a benefit to the public based on increased speed. The FEIS states: Therefore, while all Build Alternatives are projected to have a considerable positive economic impact on the region, the magnitude of that impact between alternatives is too similar for economic development to be the deciding factor in determining which alternative is preferred. (FEDERAL HIGHWAY ADMINISTRATION, 2009).

Response: This paragraph appears to state that the SC38/US 501 “GSX” has minimal travel efficiency benefit over the no-build. The projected high average speed (54 MPH) referred to in this report, as shown in Table 2 on page 12, seems inexplicably high for the SC 38/US 501 alternative given the number of intersections and driveways along that route. However, even if one were to accept that number, and accept the average speed listed in this report for I-73 (65MPH), there is still a significant travel efficiency benefit for I-73. The travel time for the no-build alternative from US 17/ SC 22 to I-95 is 75- 80 minutes and 55-60 minutes for I-73 (refer to *Interstate 73 Final Environmental Impact Statement from I-95 to the Myrtle Beach Region*, Preferred Alternative, Table 2.6, page 2-41 and Figure 2-15, page 2-32 and Figure 2-18, page 2-35). The travel time for the “GSX” alternative is likely to be closer to the no-build than to that of the build alternative.

The quote from the EIS contained in the first paragraph on page 12 of the Miley report appears to have misinterpreted the results of the economic analysis used for the EIS in which the economic benefits for all the alternatives were quantified using the REMI model and EDGE model. As a result of that analysis it was concluded that **all the build alternatives had substantial economic benefits over the no-build alternative**. However the differences between the build alternatives were not great enough to serve to differentiate between the alternatives for purposes of designating a preferred alternative.

3rd paragraph

According to the Miley report, the only variables that were changed for the sensitivity analysis were the speed inputs and average annual daily traffic volumes for some segments,

Our sensitivity analysis adjusted speed inputs and Annual Average Daily Traffic (AADT) over these segments.

Response: - According to the FHWA Economic Analysis Primer, www.fhwa.dot.gov/infrastructure/asstmgmt/primer07.cfm.

The traditional means by which analysts have evaluated risk is through sensitivity analysis. In a typical sensitivity analysis, the value of an input variable identified as a significant potential source of uncertainty is changed (either within some percentage of the initial value or over a range of reasonable values) while all other input values are held constant, and the amount of change in analysis results is noted. This sensitivity process is repeated for other input variables for which risk has been identified. The input variables may then be ranked according to the effect of their variability on BCA results.

Costs are certainly one of the variables that would result in a change to the benefit/cost value and should have been included in a sensitivity analysis.

3rd paragraph

A positive benefit/cost ratio for the SC 38/US 501 alternative increases as the traffic slows over a four-mile segment for 90 days, with an average speed of below 39 mph and additional intersection delays of 12 minutes. These are in line with projected FEIS case scenarios for 2030. Because of the high cost of building I-73, the project will not have a positive benefit/cost ratio regardless of FEIS scenarios or more extreme conditions that could be applied and modeled to a no build scenario for SC 38/US 501.

Response: This appears to be based upon one approximately four -mile segment of the “GSX” (based upon the number of VMT divided by the number of Trips) and seems to intimate that the slower the traffic moves on the “GSX” the higher the cost/benefit ratio becomes. How this is “in line with projected FEIS case scenarios for 2030” is unclear. It also *seems* to state that because of the cost of building I-73 it cannot have a positive cost/benefit ratio no matter what benefits result.

Travel Efficiency: Myrtle Beach - Page 13, Miley report

2nd paragraph

The fact that all Myrtle Beach traffic congestion is excluded from the analysis and the previous studies is important. Neither the I-73 nor SC 38/US 501 alternative affect the coastal traffic issues east of SC 22. As the following figure indicates, the areas of severe traffic congestion (indicated by the yellow and red areas) are all east of SC 22.

Graphic - Page 14, Miley report

Response: The graphic referred to is an isochrone that shows the travel time (note the label in the graphic legend) as one moves away from the terminus of I-73 at US 17 in Myrtle Beach for Alternative 4 (Figure 2 -19 on page 2 -36 of *Interstate 73 Final Environmental Impact Statement from I-95 to the Myrtle Beach Region*). The colors on the graphic show various distances

traveled from that intersection in different time intervals. This graphic does not in any way indicate areas of traffic congestion – severe or otherwise.

Construction Impacts - Page 15, Miley report

2nd paragraph

As with any construction activity, the more dollars spent, the larger the impacts on the economy will be. In the case of the proposed I-73, we have assumed an estimated \$1.3 billion in construction impacts.¹⁰ The total economic impact, including direct, indirect, and induced spending is estimated at \$1.945 billion, or a multiplier of 1.5 above the initial project cost. Over the five-year life of the project, employment is projected at 3,160 per year. These employment impacts, unfortunately, provide little benefit to the community when the project is finished.

Response: The jobs are “...primarily from two sources: the physical construction of the road and the improved access to the Grand Strand area...” (page 4, Miley report). The number of construction jobs created by I-73 is listed, but there is no enumeration of jobs created by improved access provided by I-73. Also, on page 15 of the Miley report, when discussing the construction benefits from I-73 the following statement is made, “ These employment impacts, unfortunately, provide little benefit to the community when the project is finished. ” This statement is equally valid for the employment impacts projected to occur from the construction of the GSX.

Taken from *Interstate 73 Final Environmental Impact Statement from I-95 to the Myrtle Beach Region*, page 2-42:

2.7.1.2 How do the reasonable Build Alternatives meet the primary need of economic development?

The other primary need identified was the ability to enhance economic opportunities and tourism in South Carolina. An analysis was performed that examined two sources of potential economic impacts arising from I-73: travel efficiencies and strategic development benefits. The economic impact evaluation involves the estimation of the nature and magnitude of potential transportation efficiency gains and an assessment of the strategic development economic impact.

In general, there are four categories of benefits that arise from transportation investments including:

- **Travel Efficiencies:** Benefits that accrue to potential facility users upon project completion. These are measured in terms of travel time savings, vehicle operating cost savings, accident savings and emission benefits.
- **Construction Impacts:** Impacts that arise as a result of the expenditures on local labor and materials to build the facility.
- **Operating and Maintenance Impacts:** Benefits that arise from the expenditures on local labor and supplies to operate and maintain the facility upon completion.

- Strategic Development Impacts: The economic development impacts associated with attracting and retaining business activity as a result of increased accessibility, mobility and connectivity.

Travel Efficiency

The results are based on a forecast period between 2015 and 2030. **These estimates represent only the economic impacts arising from travel efficiency savings and strategic development opportunities. They do not include benefits arising from construction and operations and maintenance impacts** due to data limitations, as well as the short-term nature of construction benefits and the substitution effects related to operating and maintenance. **Because the forecasts presented in this report represent only two categories of the above-listed benefits (travel efficiencies and strategic development impacts), the results of this study should be considered as conservative estimates.**

Table 2.7, page 2-43, includes a projected 2,240 new jobs in 2030 from the preferred alternative for I-73 South resulting from travel efficiency and Table 2.10, page 2-45 shows 1,755 new jobs **annually** resulting from strategic development. Thus a total of 3,995 new jobs **not related to the construction impacts**, would result from the Selected Alternative for I-73 in Year 2030 alone.

3rd paragraph

Alternatively, the SC 38/US 501 upgrade costs are estimated to be \$147 million.¹¹

Response: The only explanation for the cost estimate provided is that it was based upon “typical unit costs for projects in North and South Carolina, not based on site specific engineering analysis”. No documentation is provided for these cost estimates, nor is there an explanation of what specific improvements these costs would provide. The cost estimates for I-73 were based on site specific engineering. These cost estimates are not equivalent; any comparison between them is flawed.

However, there is an opportunity with SC 38/US 501 to target construction spending on critical bottlenecks providing an immediate economic impact while allowing this highway to continue to be used and to continue to serve the community now, as opposed to waiting until 2030.

Response: This statement about immediate economic impact for “GSX” is incorrect given the time necessary to complete the NEPA, design, and right-of-way acquisition processes that must occur prior to beginning construction on any elements of the GSX.

Spillover Impacts of the Proposed I-73 - Page 17, Miley report

3rd Paragraph

Due to the sudden increase in the value of land at these interchanges, the majority of businesses are large, national operations – not small or locally owned businesses. Upgrading the GSX would maintain the viability of businesses adjacent to the current SC 38/US 501.

The Grand Strand Expressway

An Alternative to the Proposed I-73 to the Myrtle Beach, SC area



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25 March 2011

The Grand Strand Expressway

A Fiscally and Environmentally Responsible Alternative to I-73 Highway in South Carolina

Introduction

The South Carolina Department of Transportation (SCDOT) has been advancing the construction of a new interstate highway, I-73, between the Rockingham NC bypass and the Myrtle Beach area. There are two Environmental Impact Statements (EIS) that evaluate the impacts of this new freeway for the northern (north of I-95) and southern (I-95 to SC 22) sections. While the southern section of I-73, from I-95 to the Myrtle Beach area, is the highest priority, both sections are the subject of wetlands permitting. In this report, the primary focus is on evaluating alternatives for the southern, higher priority section of I-73. However, there is also discussion of the northern section of I-73 in South Carolina, and of the corridor as a whole.

The proposed I-73 Interstate Highway connecting I-95 with the Myrtle Beach area will be a costly project, and result in environmental impacts to the region's fragile wetlands ecosystem and other aquatic and terrestrial resources. The EIS identified greater connectivity between I-95 and Myrtle Beach as a primary need for this project, but only examined a new interstate highway as the solution. However, there are numerous variations of roadway design that could be applied to the same purpose which could greatly reduce the costs and environmental impacts. These alternatives should be considered by the SCDOT before it proceeds further in the planning, design and permitting of this significant investment. This report provides several alternative concepts for consideration.

I-73 Background

The EIS cites "congressional intent" as a primary reason for only considering interstate highway construction to meet the needs of this project. The new highway proposed between I-95 and the Myrtle Beach area would be part of a larger "corridor" as defined in legislation as "Priority Corridor 5", as follows:

A. I-73/74 North-South Corridor from Charleston, South Carolina, through Winston-Salem, North Carolina, to Portsmouth, Ohio, to Cincinnati, Ohio, to termini at Detroit, Michigan and Sault Ste. Marie, Michigan. The Sault Ste. Marie terminus shall be reached via a corridor connecting Adrian, Jackson, Lansing, Mount Pleasant, and Grayling, Michigan.

Since this legislation initially passed, the corridor definition has been modified by Congress to terminate Myrtle Beach, South Carolina. The following graphic shows the configurations of these corridors:

The overall purpose of the I-73 project in South Carolina is to provide an interstate link between the I-73/I-74 Corridor in North Carolina and the Myrtle Beach region in South Carolina, to serve residents, businesses, and travelers while fulfilling congressional intent in an environmentally sensitive manner. Thus, providing an interstate facility is an integral part of the project's purpose and has been since I-73 was identified as Corridor 5 under Section 1105 of ISTEA, which designated corridors that were undeserved by the interstate highway system.

A Primary Need is an essential need for the project that must be met. The two Primary Needs identified for the I-73 project include:

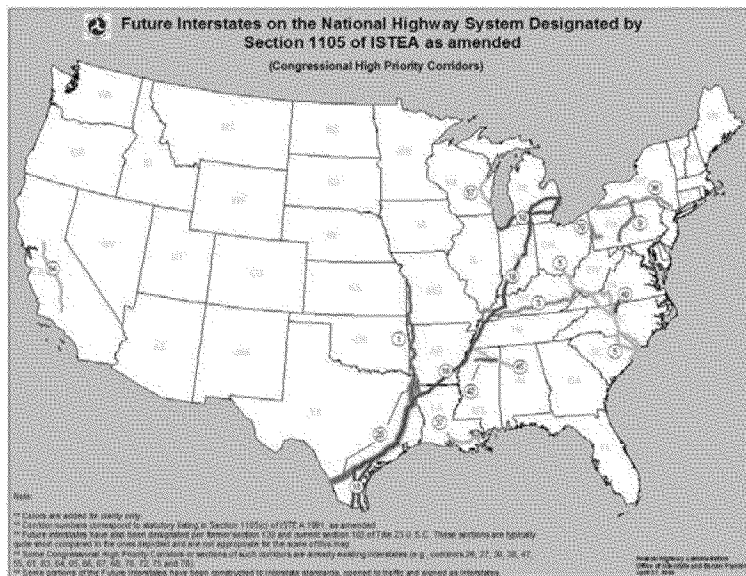
- **System Linkage** – Improve national and regional connectivity by providing a direct link between the I-73/I-74 National Corridor and the Myrtle Beach region; and,
- **Economic Development** – Enhance economic opportunities and tourism in South Carolina.

Contrary to the statement on Page 1 that a new location interstate was the only solution examined, upgrading existing roads was also evaluated in the 2003 I-73 Feasibility Study and during the alternative development process using data available via GIS layers. As described in the Alternative Development Technical Memorandum, ¹ "Use of Existing Transportation Infrastructure" was one of the Alternative Evaluation Criteria considered by the Corridor Analysis Tool (CAT), with a scale value ranging from 1 for Principal Arterials to 3 for Local Roads. The CAT overall scale value ranged from 1 to 10, with 1 being the feature that is least important to avoid and 10 being the feature most important to avoid.

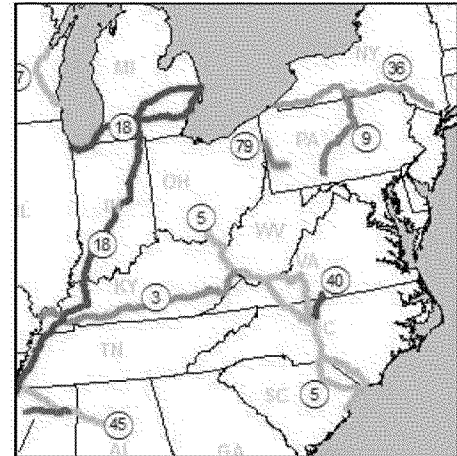
The Grand Strand Expressway report by Smart Mobility, Inc. provides limited quantification (page 11) in support of the statements regarding the reduced costs and environmental impacts that could result from additional alternatives to be considered. However, the results of the CAT analysis indicate the upgrade of most of the existing roadway segments resulted in greater impacts than new alignments. The table below quantifies the potential impacts associated with the preliminary alternative corridors that evaluated the use of existing roads (shaded) as compared with the preliminary alternative corridors that were voted on by the Agency Coordination Team (ACT, December 9, 2004 meeting). Of the corridors listed below, the ACT Alternatives 1 through 7 were recommended for further analysis.

Alternative Corridor	Wetland Impacts (acres)	Potential Relocations	Other Info
S.C. 38/U.S. 501 (B-1)	679.6	1 Fire Dept., 7 Churches	Potential impacts to 10 Potentially Eligible NRHP Sites, two National Register Sites, the Little Pee Dee Heritage Preserve, and two cemeteries/
U.S. 501 Bypass/S.C. 41/ U.S. 378 (1-K)	862.0	6 Churches	
S.C. 41/ U.S. 378 (3-K)	800.0	1 Fire Dept., 7 Churches	
ACT Alternative 1 (1-W1-W20-B)	596.5	1 Fire Dept., 2 Churches	
ACT Alternative 2 (2-W1-W20-B)	603.8	4 Churches	
ACT Alternative 3 (3-I)	636.0	2 Fire Dept., 2 Churches	
ACT Alternative 4 (1-W1-W20-G)	603.4	1 Fire Dept., 2 Churches	
ACT Alternative 5 (1-I)	660.7	1 Fire Dept., 3 Churches	
ACT Alternative 6 (3-W20-B)	523.5	2 Fire Dept., 1 Church	
ACT Alternative 7 (3-W20-I)	552.4	3 Fire Dept., 2 Churches	
S.C. 9 Alternative (5-C)	688.1	2 Fire Dept., 5 Churches	Potential Impacts to Mitigation Site (Kozo Briggs) and two cemeteries; crossing of state scenic designated area of the Little Pee Dee River.
S.C. 9 Alternative (4-W8-C)	764.8	1 Church	
S.C. 9 Alternative (3-W8-C)	634.7	None	Crossing of state scenic designated area of Little Pee Dee River.
NOTES: Information based on best available data at the time, from GIS layers provided by various government sources.			

¹ SCDOT, *Alternative Development Technical Memorandum, from I-95 to the Myrtle Beach Region*, page 8 and Table 2.3.

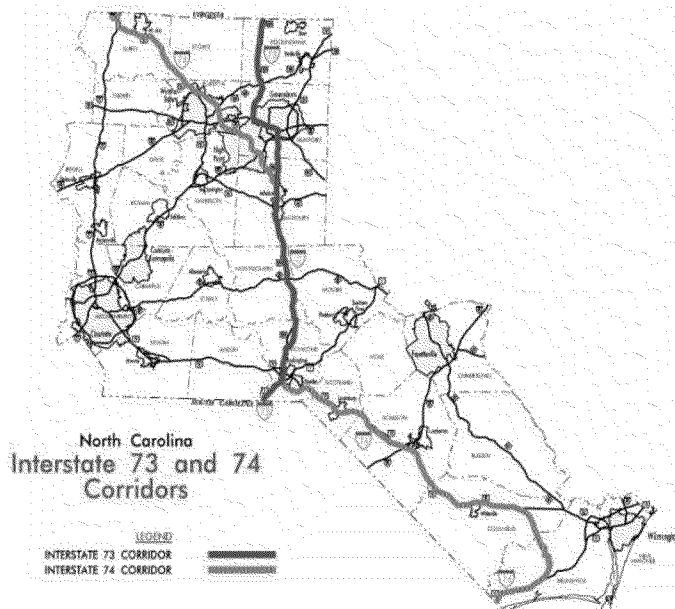


Excerpt from map showing Corridor 5, which is the designated routes for I-73 and I-74.



There are several important things to note from the above map, which was prepared in April 27, 2006.

- 1) The I-73 and I-74 corridors are closely intertwined. Constructing full interstate highways along both corridors would be redundant, excessive, result in unnecessary environmental impacts, and be wasteful of public and/or private funds. Currently, both North Carolina and South Carolina are proceeding with separate studies for each corridor, and neither considers the potential of the other corridor in their analysis.
- 2) The above map indicates (correctly) that I-73 is no longer planned through Ohio and Michigan. These states have both dropped the interstate corridor from their long range plans for both fiscal and environmental reasons. The states of Michigan and Ohio are both fulfilling the congressional intent of Priority Corridor 5 by improving existing roadway corridors. The legislative description of this as a priority corridor does not in any way constrain or require the states to construct a new interstate highway.
- 3) Another factor that is not considered in the EIS is the redundancy with the proposed I-74 corridor in North Carolina. This corridor is nearly parallel with the proposed I-73, but this is not considered in defining the need for or consideration of alternatives in the EIS.



This map from the FHWA website shows the portion of I-73/I-74 that will be included in the Interstate Highway System once it is completed/converted based on the National Highway System Designation Act of 1995.

1.) Congress designated two routes, I-73 and I-74, in ISTEA, National Highway System Designation Act of 1995, and TEA-21. Both I-73 and I-74 have independent utility and different purposes, and serve different, underserved areas. I-73 in South Carolina will serve the tourism industry as well as provide interstate access to the Pee Dee Region (refer to Chapter 1 of I-73 South and I-73 North). South Carolina's economy is highly dependent on tourism, which is the largest employer and fourth largest generator of gross state product in S.C. Of the \$8.5 billion spent on tourism in the state in 2005, 32% was spent in Horry County. Most recent information from SCPRTR complements the information in the I-73 South FEIS and shows that tourism in Horry County is still a major factor in the state. \$14 billion was spent on tourism in 2009, and the travel and tourism sector supports the jobs of nearly 1 in 10 South Carolinians. The highest amount of domestic travel expenses was spent in Horry County in 2009, and Horry County had the highest number of direct tourism jobs. The Myrtle Beach area had approximately 14 million visitors in 2010 according to the Myrtle Beach Chamber of Commerce Statistical Abstract. The purpose and need of I-74 in this area is to provide a link to serve the Wilmington area, including the Wilmington Port, as well as the southeastern counties of North Carolina that are currently not served by an interstate.

2.) Michigan DOT conducted a feasibility study in 2001. According to a press release from MDOT, released June 12, 2001, the MDOT postponed further studies for I-73 because "The department is suspending the study process until we believe adequate funding exists to proceed into design, right-of-way acquisition and construction," said State Transportation Director Gregory J. Rosine. "We will continue to work with local communities and the Ohio Department of Transportation to coordinate future improvements." According to Mr. Hugh McNichol, of the MDOT Project Planning Department (personal communication, October 2011), as states to the south, especially Ohio move forward with I-73, it will become a higher priority for Michigan.

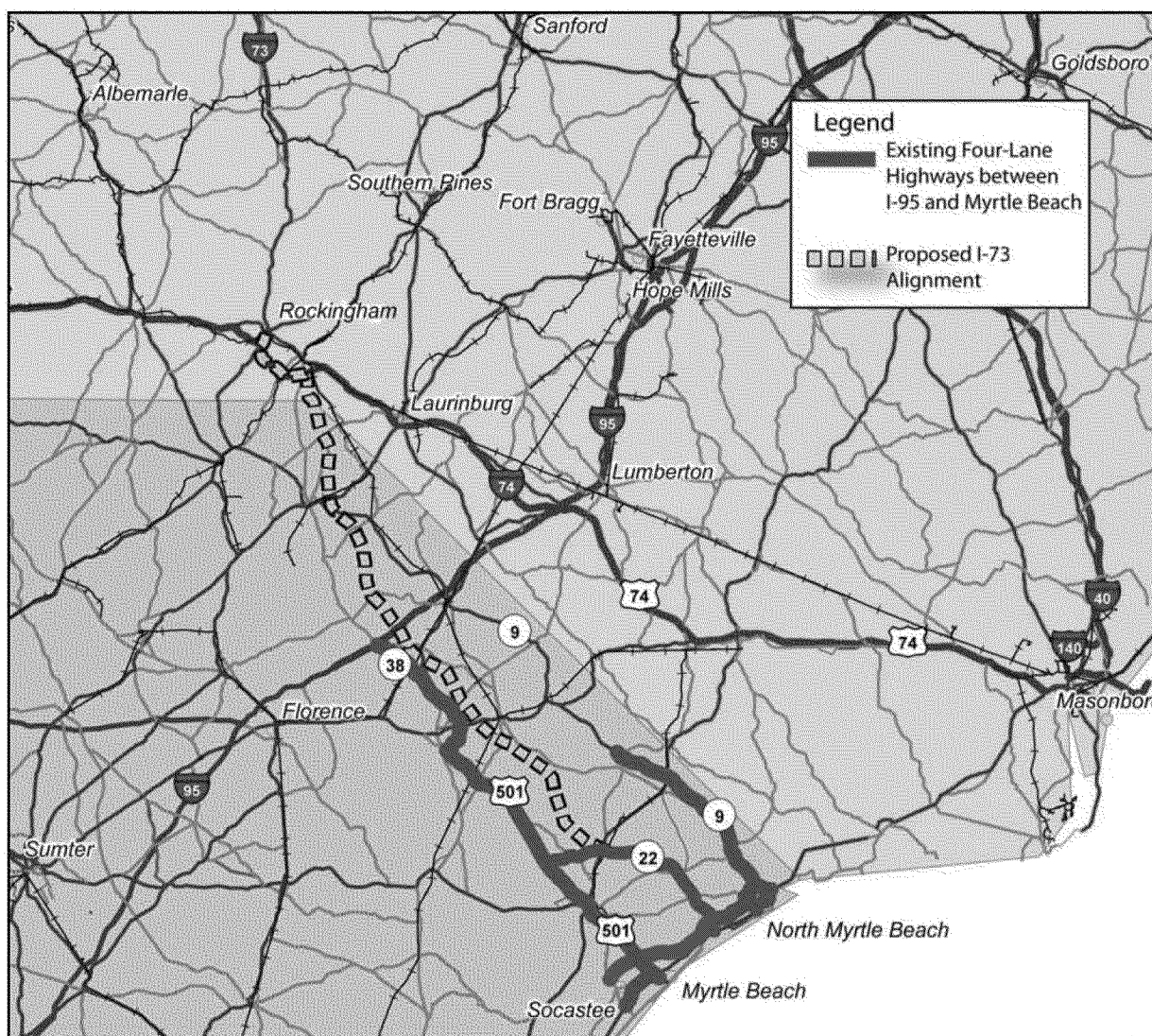
Based on discussion with Mr. Scott Phinney from Ohio DOT Statewide Planning and Research (personal communication, October 2011), I-73 is currently not recognized as a priority project in Ohio due to funding constraints. The project is not included in the update to their Long Range Plan. However, the upcoming Statewide Freight plan will evaluate whether a freight corridor would be needed in the next 20 years, and could consider I-73 as such a corridor. One significant challenge for I-73 in Ohio is changing access along the proposed route and upgrading the existing roadway. Portions of the existing route along U.S. 23 are controlled/limited access; however other segments are highly developed and commercialized, and the impacts to existing residents/businesses and ROW costs would be high to upgrade to interstate standards and install frontage roads to maintain access.

3.) Since I-74 has independent utility, and would not meet the purpose and need for I-73 in South Carolina, it was not included in the I-73 South or I-73 North Environmental Impact Statements. A roadway travel demand model was developed to support traffic analyses undertaken as part of the I-73 Corridor EIS. Over 17,767 completed surveys were obtained during the summer and winter roadside travel surveys. This survey data was then incorporated into urban and statewide models to determine traffic assignments for the various alternatives. Thus, the trips and associated traffic evaluated in the I-73 EIS are based on Myrtle Beach origin/destination traffic, not travelers from Wilmington NC or other NC coastal regions.

This segment of U.S. Route 74 from N.C. 41 to the U.S. Route 74/76 interchange just west of Whiteville, NC, will need to be upgraded to interstate standards prior to becoming designated I-74. This upgrade is not included in the North Carolina Statewide Transportation Improvement Program (STIP). The new and upgraded section of I-74 between Union Valley Road (SR 1585) in Whiteville to U.S. Route 17 is known as Segment R-3436. A feasibility study was completed for R-3436 in 2005 by NCDOT. Existing U.S. Route 74 and new alignment would be constructed for this segment, ranging from 63.3 to 65.5 miles in length, not including the additional roadway that would have to be built in South Carolina to connect to the existing Carolina Bays Parkway. The feasibility study recommended an alternative that would cost \$641 million in 2005 dollars, and have 190 residential and 32 business relocations. In addition, this segment is not currently funded in the STIP, has not gone through the environmental documentation/permitting phase, and is not ranked as a high priority within the 1,200 projects scored by NCDOT in its Strategic Prioritization Process (which provides the projects being funded in the STIP). Based on personal communication with Alpesh Patel (October 2011) with the NCDOT Strategic Planning Office, due to the project's potential for large human and natural resource impacts and high costs, it appears unlikely that it will be funded in the near future. Because of the importance of the interstate connection for the Myrtle Beach region, and the economic benefits to the rest of the Pee Dee Region, South Carolina cannot be dependent upon a connection that may or may not be constructed by NCDOT.

TSM (Transportation System Management) Alternatives Were Not Studied in the EIS

There are currently several routes that connect I-95 to the Myrtle Beach area, with the Route 38/501 corridor being the most heavily traveled. Providing an improved connection to I-95 does not require an interstate highway, and there are significant opportunities to improve the existing conditions through additional strategic investments in the existing corridor, which could include intersection improvements, grade separated interchanges, and some bypass segments where appropriate. A set of improvements to existing corridors has the potential to have nearly all of the same benefits of the proposed interstate highway at a fraction of the cost, and with far less impact to the environment. The following map shows that there are several existing corridors that run parallel to the proposed I-73, which could be upgraded to meet the needs of this project. In particular, there are several corridors of four lane roadways parallel to the southern I-73 section in South Carolina, which could provide the basis for a TSM alternative.



The EIS's single focus on a new interstate highway eliminates numerous opportunities to reduce environmental impacts and save taxpayer money. The states of Michigan and Ohio are intending to

What is the basis for the statements on the previous page regarding the “same benefits... at a fraction of the cost” and the “EIS’s single focus”?

S.C. Route 38/U.S. Route 501 and S.C. Route 9 were both initially evaluated in the SCDOT’s I-73 Feasibility Study, published June 2003. These existing corridors were eliminated from further consideration due to costs, community impacts, input from residents, government entities, and school districts, and potential access issues (due to the close proximity of development to the roadway, there would not be room for access/frontage roads along the facility). The I-73 Feasibility Study determined that the upgrade of S.C. Route 38/U.S. Route 501 and S.C. Route 9 would cost more than new alignment alternatives, with the S.C. Route 9 existing corridor costing almost \$360 million more and the S.C. Route 38/U.S. Route 501 existing corridor costing over \$150 million more than the highest cost, new alignment alternative studied. Extensive new alignment construction would also be required in the form of bypasses around communities with the existing routes.

The existing roadways within the project study area (S.C. Route 9, S.C. Route 38, S.C. Route 917, and U.S. Route 501) are either two- or four-lane roadways that have numerous access points for adjacent properties. In addition, many local roadways intersect with these roads, which increases the number of access points. In order to upgrade these uncontrolled access roads to interstate design standards, access would have to be closed to the main roads and frontage roads would have to be constructed parallel along existing roadways to provide access. This would result in a larger roadway footprint, acquiring homes, businesses, churches, and cemeteries along each roadway. Interchanges would have to be constructed along the existing roadways to provide access to/from the frontage roads and intersecting roads to the roadway. The existing roadway would have to be brought up to interstate standards, which are found in the *I-73 South Carolina Design Criteria* (dated February 21, 2005). Due to interstate design, some existing interchanges on U.S. Route 501 also would need to be replaced with ones that meet design criteria (such as S.C. Route 38, U.S. Route 301, S.C. Route 41, U.S. Route 501 Bypass for example).

Although it was concluded in the Feasibility Study that the existing alignments of S.C. Route 38/U.S. Route 501 and S.C. Route 9 would result in extensive community impacts, require considerable new location construction in the form of bypasses, and in some instances may not be able to accommodate the necessary frontage roads, they were still evaluated during the DEIS preliminary alternatives analysis with the CAT Tool. The results of using these existing alignments were presented to the ACT. Of the 25 preliminary Build Alternatives presented to the ACT for I-73 South, approximately nine used portions of U.S. Route 501, four used a portion of S.C. Route 9, three used portions of S.C. Route 917, and one alternative used existing S.C. Route 38 (refer to page 2-11 of I-73 South FEIS or the I-73 South Alternative Development Technical Memorandum). Seven of these 25 preliminary Build Alternatives were voted on to be carried forward for study by the ACT, based upon their lower potential impacts than the other Build Alternatives.

The CAT analysis results for using existing roadways are previously summarized in Table 1, with more detailed explanation below:

CAT run B-1 used major portions of U.S. 501, and was found to have almost 680 acres of wetland impacts, as well as potential impacts to 10 potentially eligible NRHP sites, two National Register Sites, the Little Pee Dee Heritage Preserve, two cemeteries, seven churches, and 1 fire department. Using U.S. Route 501 through the Town of Aynor and Horry County was opposed (one petition included almost 900 signatures) by those living in the area. Horry County Council in a letter dated March 13, 2006, reported a unanimous vote against the route that crossed at Galivants Ferry and extended southeast along U.S. Route 501 through Aynor. The Town of Aynor voted unanimously (letter dated March 21, 2006) to oppose the route that would be constructed along existing U.S. Route 501 at Galivants Ferry and through Aynor. Letters were also received from the Horry County School Administration (refer to letters dated April 6, 2005, April 12, 2005 and January 27, 2006) that expressed opposition to the segment that would go through Aynor along U.S. Route 501. The SCDNR and USFWS also expressed opposition to this segment. This segment was eliminated from further analysis based on the results of the Preliminary Alternatives analysis described above and provided in Table 1, as well as public and agency input. However, in response to comments received during the Section 404 permitting process regarding use of existing roadway facilities, an additional analysis was conducted using a 400-foot wide corridor and aerial photography from Google Maps. Results from this analysis indicated that in addition to the public land uses, such as the churches, cemeteries, and the fire department included in Table 1, use of this route would result in relocation of 157 residences and 49 businesses.

CAT run 5-C followed S.C. Route 9 from Dillon, SC, to S.C. 410, before going south to connect to S.C. Route 22. This alternative was found to impact approximately 688 acres of wetlands, two fire departments, three churches, two cemeteries, the Kozo Briggs Mitigation Site, and would cross the Little Pee Dee River, a state-designated scenic river. This was in the process of being nominated as a state scenic river at the time of the evaluation and SCDNR asked that this alternative be eliminated. The ACT agreed on December 9, 2004, by consensus vote to eliminate this alternative.

CAT run 4-W8-C also used a portion of existing S.C. Route 9. Considerable discussion with the ACT centered around this potential corridor that would closely follow the S.C. 9 corridor south from I-95 near the NC state line, passing approximately two miles west of Lake View, crossing the Little Pee Dee River on S.C. 9, turning off of S.C. 9 to the southwest, and intersecting S.C. 22 at S.C. 410. This alignment would have approximately 765 acres of impacts to wetlands and would have impacted one church. The amount of wetland impacts was more than 100 acres greater for this alignment versus the rest being proposed. A thumbs-up consensus was reached by the ACT to move forward with 7 other corridors, but the consensus was to not move forward with this S.C. 9 corridor. The SCDNR asked that this consensus be reconsidered. The FHWA and SCDOT responded that this corridor was dropped from further consideration because it had greater wetland impact (~100 acres) than other alternative corridors, minimal access to Marion County (important for economic development, one of the primary needs for the project), and more potential natural resource impacts resulting from the extension of I-73 north of where this alternative would intersect I-95. At this point, elevation of this issue was dropped by SCDNR.

Public comments were received regarding the use of existing S.C. Route 38, including intersecting with I-95 at the existing S.C. Route 38 interchange. The existing interchange at S.C. Route 38 and I-95 would have required expansion to accommodate the larger design of an interstate to interstate connection, I-73 to I-95. Four commercial establishments that provide approximately seven million dollars annually for Dillon County would have been impacted. The businesses could not be relocated at the same interchange since both I-73 and I-95 would have fully controlled access, not allowing motorists to leave the interstate to reach these businesses and potentially losing this annual revenue for Dillon County. In addition, utilizing the existing S.C. Route 38 north of I-95 would have impacted the communities of Oak Grove, Brownsville, Bristow, Blenheim, and Monroe Crossroads before entering downtown Bennettsville. The potential impacts to the residences, churches, and cemeteries in these communities would have been much higher than those associated with the three reasonable alternatives. Maximum use of existing S.C. Route 38 was attempted north of Bennettsville, but existing communities such as Brightsville, Aaron's Temple, and Prevatts Chapel would have been severely impacted (page 2-14 of I-73 North EIS).

It was determined that existing S.C. Route 22 (Conway Bypass) could be incorporated into the I-73 design. Currently, S.C. Route 22 is a four-lane divided highway extending 29 miles between U.S. Route 501 near Conway to U.S. Route 17 in North Myrtle Beach. The portion of S.C. Route 22 from the intersection of I-73 all the way to its eastern terminus at U.S. Route 17 would be incorporated into I-73. It is a fully controlled access roadway and would meet interstate design standards except that the paved portion of the road shoulders is too narrow. Meeting standards would require additional paving of the existing road shoulders. However, the footprint of the roadway would not change, thus no additional direct impacts would result. By utilizing approximately 24 miles of S.C. Route 22, an estimated \$500 million would be saved,² as well as minimizing potential impacts to human and environmental resources along another route. (This information can be found on page 1-12 of I-73 South FEIS.)

² The cost to construct S.C. Route 22 over 10 years ago was approximately \$386 million. Adjusting for inflation, inclusion of the 24-mile S.C. Route 22 into I-73 would save approximately \$500 million.

fulfill congressional intent through modest improvements to existing corridors, an approach that should be included in this EIS essentially as a “TSM” alternative. Federal guidance states that TSM alternatives should be included in environmental documentation, including in cases where a new road is proposed as a “connecting link”, such as this I-73 EIS. Federal Highway Administration (FHWA) also clearly states that projects that propose a roadway on new alignment in a rural area should examine the potential of upgrades on existing roads to address the needs.

While the above discussion relates primarily to major projects in urbanized areas, the concept of achieving maximum utilization of existing facilities is equally important in rural areas. Before selecting an alternative on new location for major projects in rural areas, it is important to demonstrate that reconstruction and rehabilitation of the existing system will not adequately correct the identified deficiencies and meet the project need. (FHWA Environmental Toolkit, <http://www.environment.fhwa.dot.gov/projdev/impta6640.asp#alts>, accessed 2/16/2011 5:56:26 PM

Transportation System Management must be included as an alternative or design option where applicable. <http://www.environment.fhwa.dot.gov/projdev/tdmpdo.asp>, accessed 9/20/2007 4:09 PM

Because it lacks a TSM alternative, the EIS is not comprehensive, and should be amended before further environmental permitting is undertaken.

An Alternative: The Grand Strand Expressway

An expressway does not have a single definition, but many state departments of transportation have their own working definition of an expressway. In general, an expressway is a four lane divided roadway, with access limited but not completely controlled, and a combination of some at-grade intersections with grade-separated interchanges at the major junctions. A Grand Strand Expressway could be constructed primarily by upgrading existing roadways, and could possibly include some short segments of new roadway where bypasses are required.

The SC 38/501 corridor between I-95 and SC 22 has had many upgrades in recent years, providing a foundation for additional improvements to create a continuous expressway. The North Carolina DOT has upgraded many corridors to an expressway¹ as an alternative to full interstate highway standards as a more affordable and more easily implemented project design.

The benefits of the expressway option provide far greater flexibility as implementation can unfold in stages, which is much more difficult when constructing a limited access highway on a new alignment. The cost of an expressway will be far lower than an interstate highway, as the amount of property acquisition would be considerable lower due to the smaller footprint and right-of-way costs. This would also reduce the environmental impact of the corridor improvements, as very little new construction through undisturbed areas would be required.

An expressway could take advantage of innovative intersection designs, which are currently being used very successfully in North Carolina along several rural expressway corridors. The North Carolina Department of Transportation (NCDOT) has completed a comprehensive research program on

¹ <http://www.ncdot.org/doh/preconstruct/tpb/SHC/facility/Expressways/>

What is the basis for this statement? The status of I-73 in Michigan and Ohio was previously discussed based on information and correspondence with MDOT and ODOT. It is also important to note that congressional intent varies by State, as described in the National Highway System Designation Act of 1995, 1105 (c). This Act specifically cites existing routes in Ohio, Kentucky, West Virginia, Virginia, and North Carolina that the “Corridor shall generally follow.” In South Carolina, however, the Corridor is described only as extending from the “South Carolina State line to the Myrtle Beach Conway region.”

FHWA guidance requires that all “reasonable alternatives” or a “reasonable range of alternatives” be considered during the EIS process³. Transportation System Management alternatives include strategies intended to increase the efficiency of existing facilities without increasing the number of through lanes, such as incorporating high-occupancy vehicle lanes, turning lanes, reversible lanes, ridesharing, traffic signal coordination, and mass transit. As stated previously, the purpose of the I-73 project in South Carolina includes providing an interstate link to the Myrtle Beach region in order to address the primary needs of providing system linkage and economic development opportunities, as well as the secondary need of hurricane evacuation. TSM alternatives would not meet these project needs and thus, are not applicable.

How is the “Grand Strand Expressway” that is described any different than existing U.S. Route 501?

The NCDOT is building an interstate facility for I-73/I-74. To achieve this, the NCDOT is upgrading some existing roads to interstate standards, and in other areas, the facility will be constructed on new alignment designed to interstate standards.

What is the basis for these statements regarding constructability, cost and environmental impacts? Alternatives evaluated for I-73 that included use of existing roadways presented greater constructability issues⁴ as compared to those on new alignment. While U.S. Route 501 is a four-lane road, it would have to be significantly modified to meet interstate standards. Major reconstruction would include widening the median, providing shoulder widths in accordance with SCDOT design standards, and adding frontage roads. Building on the existing U.S. Route 501 corridor would require an extensive frontage road system on both sides to maintain access. This extensive system of frontage roads and the upgrades to U.S. Route 501 would result in impacts to residences, businesses, and other facilities and create additional challenges for construction and maintenance of traffic.

The overall purpose of the I-73 project in South Carolina includes providing an interstate link to the Myrtle Beach region.

Minimal quantification of the anticipated reduced costs or environmental impacts are provided. Although the Expressway design could possibly result in lower wetland impacts due to the presence of existing development, the large footprint that would be necessary to accommodate a widened facility including the wider median for the Superstreet design, would result in an unknown amount of impacts to businesses and residences.

³ FHWA, Environmental Review Toolkit, <http://environment.fhwa.dot.gov/projdev/tdmalts.asp> (June 8, 2012).

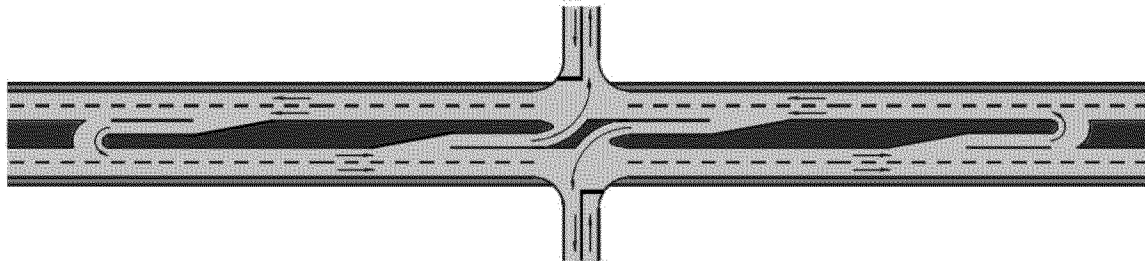
⁴ FHWA/SCDOT, *Interstate 73 FEIS, from I-95 to the Myrtle Beach Region*, p. 2-17.

“superstreet” design, which could be applied to the Grand Strand Expressway to improve the safety and efficiency of the corridor’s at-grade intersections.

Superstreet Intersection Design

The North Carolina DOT has conducted detailed research on “superstreet” intersection designs along both suburban arterial and rural expressway corridors, and found that these design techniques have promise to improve safety and capacity of intersections^{2,3}. Several schematics below show a typical expressway unsignalized intersection, where the minor roadway stops before entering or crossing the expressway. The Superstreet, or “J” unsignalized intersection design, shown below, is an alternative that can improve both the safety and efficiency of an existing four lane roadway, especially during high volume periods such as summer changer over weeks.

J Intersection for Superstreet Expressway Design



The primary reason for the greater efficiency is that through traffic on the main road only has to stop for left turning traffic. Side street traffic enters or crosses the road by making a right turn, during the main road’s left turn green phase, and then reverses direction at a U-turn location. This design also makes the corridor more accessible to side street local users. A recently completed “superstreet” upgrade of an arterial on Route 17 in Wilmington, NC provides a nearby example of this intersection configuration. While this application is in an area with more suburban development patterns with signalized intersections and higher traffic volumes, it does offer an example of these intersection designs.

There are also many unsignalized corridors that have used these intersection design concepts. Two examples are shown below as illustrative examples of superstreet corridors and intersections.

² An Update on Superstreet Implementation and Research, Hummer, Joseph E. Ph.D. and P.E., and Jagannathan, Ram. Submitted to Eighth National Conference on Access Management, Transportation Research Board, Baltimore, MD, July 2008. <http://www.accessmanagement.info/AM08/AM0807Hummer/AM0807Hummer.pdf>

³ North Carolina DOT website on Superstreets:
<http://www.ncdot.gov/doh/preconstruct/tpb/SHC/facility/superstreet/>

How would the safety and efficiency of the Superstreet design compare to an interstate with controlled access? Based on information from the FHWA,⁵ the signalized Superstreet design (like the Route 17 in Wilmington, NC, example referenced by Smart Mobility Inc.) “can result in more stops for through vehicles ... and create out-of-direction travel for the cross street through and left-turn movements, which limits their capacity and increases their travel times.” Although there are fewer conflict points as compared to a four-leg traditional intersection, potential liabilities of the superstreet crossover that were identified by the FHWA include: longer travel distance and time for minor street movements, wide median needed, possible restrictions to access, and potential for driver and pedestrian confusion. This alternative could create issues for driver expectancy and the required wide median width could result in increased impacts to frontage roads and ROW requirements.

An expressway would not provide the travel efficiency benefits that an interstate would. Lower speeds on a non-controlled access facility would result in longer trip times. Refer to the No-build versus the Preferred Alternative travel time savings in Chapter 2 of the I-73 South FEIS. As discussed in this FEIS text, the large number of visitors arriving to and departing from the area in vehicles, congests the local transportation network. Traffic congestion is currently a problem for this area primarily on “change-over day,” when the tourists at the beach leave and new tourists arrive. This causes delays along U.S. Route 501 from Aynor south. This traffic situation has gotten so bad in Aynor that the SCDOT is in the process of constructing an overpass so the residents of Aynor can get from one side of U.S. Route 501 to the other on days with heavy traffic congestion. By providing an interstate connection from S.C. Route 22 and U.S. Route 17 all the way to I-95, a high-speed alternative route to bypass this congestion would be available. The diversion of traffic to I-73 would reduce congestion on local roads and improve the travel efficiency within the three-county (Dillon, Marion, and Horry Counties) I-73 South study area.

Based upon the results of the I-73 traffic modeling, the average speed of travel of vehicles on the network would increase from slightly less than 52 miles per hour to more than 56 miles per hour. This is a large increase in speed when applied to the over 22,000 trips in the network each day. The significance of this increase in travel efficiency is also reflected in the reduced travel times that would be recognized with the construction of I-73. The travel time maps that were developed to evaluate this time savings depict an approximately 20-minute reduction in 2030 travel times between I-95 and the junction of S.C. Route 22 and U.S. Route 17, an approximately 65-mile distance.⁷ This travel time savings increases to approximately 25 minutes during the three-month peak season (June 1 to August 30). Applying these minutes of travel savings to the projected 2030 Annual Average Daily Traffic (AADT) volumes for I-73 of 22,683 vehicles per day,⁸ increasing to 29,619 vehicles per day during the peak season,⁹ represents a daily time savings of 7,561 hours, increasing to over 12,341 hours in daily time savings for trips made on I-73 between I-95 and S.C. Route 22/U.S. Route 17 during the peak season.

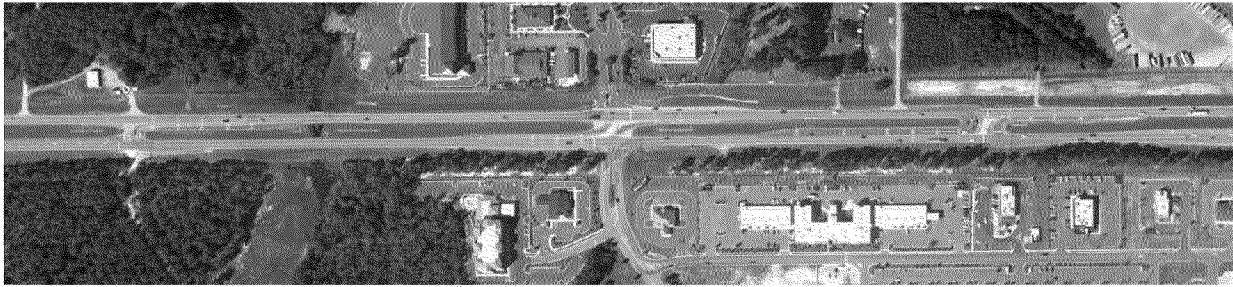
⁵ FHWA, *Signalized Intersections: Informational Guide*, Publication No. FHWA-HRT-04-091, p. 263.

⁶ *Ibid.*, p. 264.

⁷ FHWA/SCDOT, *Interstate 73 FEIS, from I-95 to the Myrtle Beach Region*, pp. 2-32 through 2-40.

⁸ FHWA/SCDOT, *I-73 Traffic Technical Memorandum, from I-95 to the Myrtle Beach Region*, p. 37.

⁹ *Ibid.*, p. 81.

Route 17, Wilmington NC, Signalized Superstreet Intersection*Route 17, Wilmington NC, Unsignalized Superstreet Intersection*

Expressway Alternative Concepts

For purposes of illustrating how the concepts of expressway upgrades could be considered for alternatives to the proposed I-73, several alternative concepts are presented in this report for consideration. These are presented as planning level concepts offered for consideration and discussion, and in no way are proposed as engineered designs. However, these concepts may merit further consideration in the EIS and permitting process, which could be amended to include non-interstate highway alternatives. Because the EIS documents for the two sections of I-73 are incomplete in their analysis of alternatives, a new or supplemental EIS could be prepared that considers a balance of environmental consequences, economic benefits, and transportation utility of a wider range of alternatives. Such an analysis would allow for a more serious consideration of the costs and benefits of various investment and design options.

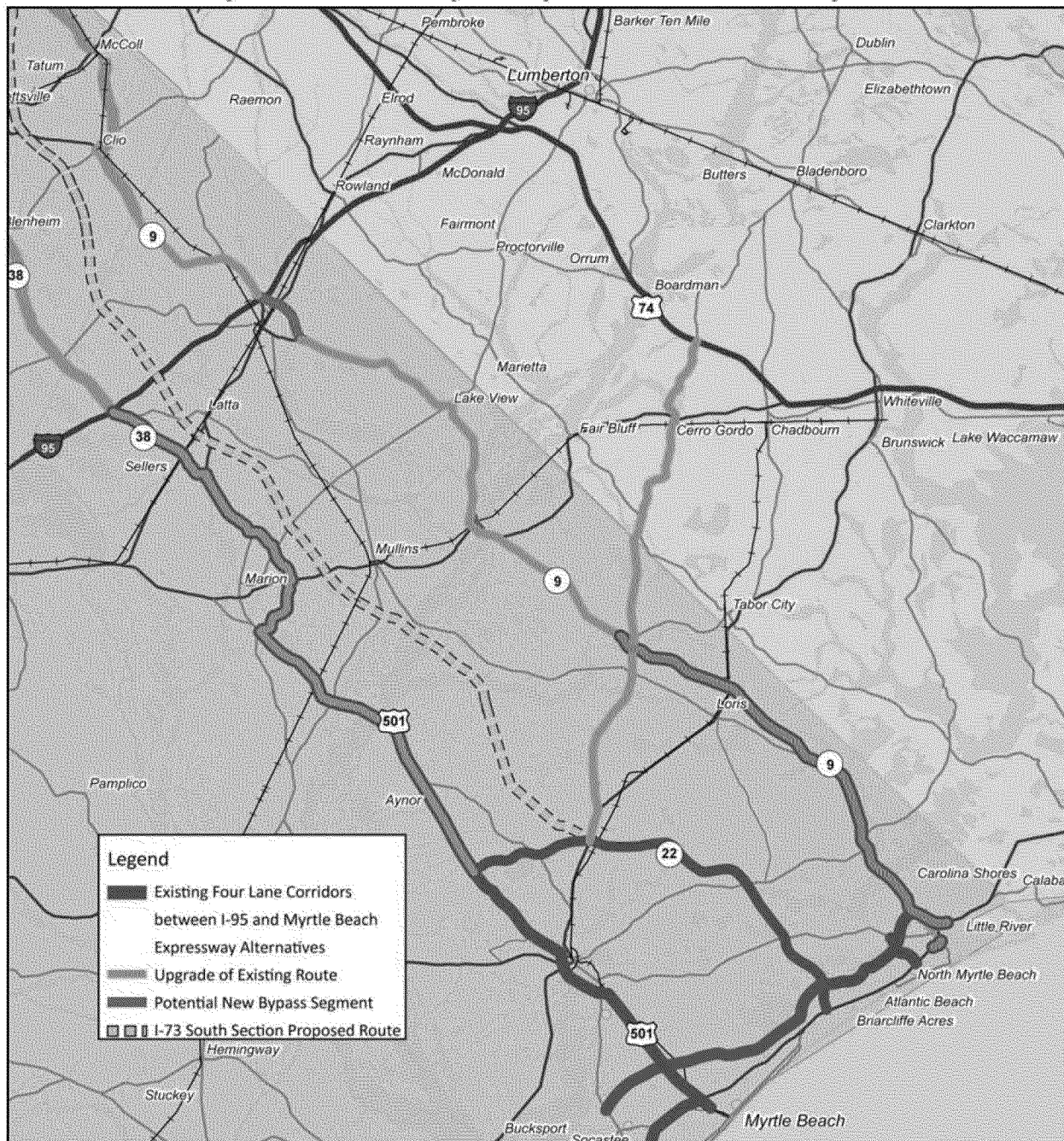
Three options presented for consideration in this report include:

- **SC 38/US 501:** SC Route 38 to US 501 From I-95 to Route 22
- **Route 9:** From I-95 SC Route 9 to SC 31 (Carolina Bays Parkway)
- **US 74 Connector:** From US 74 (future I-74 in North Carolina), near Whiteville NC, to SC Route 22 via a combination of new construction and upgrade of local roadways

While the concepts in this report focus particularly on the corridor between I-95 and the Myrtle Beach area, as that is the current priority for construction, these concepts can be applied to existing corridors north to Rockingham NC as well, as a complete alternative to the I-73 proposal described in the EIS. The following map provides the locations of these alternatives.

As discussed previously, the alternatives analyses completed for I-73 did evaluate the use of existing roadways, including S.C. Route 38, U.S. Route 501, and S.C. Route 9. However, it was determined that the Preferred Alternative would best satisfy the public need while minimizing impacts. The Preferred Alternative was selected based on input from the public and from elected officials, input from the resource and regulatory agencies, the many potential environmental and human resource impacts associated with the Build Alternatives, constructability, and construction costs.

As discussed throughout these responses to the report prepared by Smart Mobility, Inc., the expressway alternative concepts would not provide the travel efficiency benefits of an interstate facility, would not address the primary need for economic development, nor would they provide for improved hurricane evacuation, a secondary need.

Potential Corridors for Grand Strand Expressway Alternatives to I-73 to Myrtle Beach

These concepts are illustrated on the above map, with upgrade of existing facilities shown in orange and new bypass sections shown in purple. The facilities could be four lane expressways, with 2 lanes in each direction separated by a median of 40 feet or more. Intersections with major roads could be grade separated interchanges at major junctions, and local intersections could be upgraded to “superstreet” design, or other modern arterial intersection designs suitable for rural environments.

Regarding the use of existing facilities, they were included in the CAT analysis and evaluated throughout the FEIS alternatives evaluation. As previously discussed, existing S.C. Route 22 was evaluated and determined that it could be easily upgraded to interstate standards without any additional ROW impact. It is a controlled-access road. Therefore, it was incorporated into I-73 South Project, which saved approximately \$500 million.¹⁰

For the project as a whole, however, the proposed upgrade alternatives fail to address the purpose of the project as well as one of the primary needs: economic development. “Interstate development is often viewed as a significant part of economic planning/development program initiatives as prioritized by local, regional and state economic development authorities. Such initiatives usually address a range of factors that make an area appealing to employment-generating development. Labor force characteristics, land availability, public community and institutional services, housing, educational resources, other infrastructure services, cultural/recreational resources, and attractive nearby downtowns are often cited as appealing and important ‘quality of life’ attributes or factors in addition to interstate access. As long as there is an emphasis on the current highway surface transportation technology to service the economic development initiatives and needs within and between many regions, interstate development will likely play a significant and important role as one of many factors that help improve local, regional, and national level economies.”¹¹

The Expressway Alternative would also fail to address the secondary project need of hurricane evacuation, which is a concern for the Myrtle Beach region due to the dramatic increase in the resident population and coinciding tourist and hurricane seasons. The region is currently served by three designated hurricane evacuation routes that connect U.S. Route 17 to I-95: S.C. Route 9; U.S. Route 501; and U.S. Route 521. In addition, U.S. Route 378, designated as a hurricane evacuation route, connects to U.S. Route 501 in Conway. Lane reversal is feasible on a portion of U.S. Route 501; however, it results in negligible clearance time reductions because the other major bottleneck that controls clearance time on this road (U.S. Route 501 at Aynor) is “upstream” of the reversal area.¹² The addition of a four-lane interstate system would help reduce the time for evacuation and as a controlled-access facility, it also would make lane reversal simpler. I-73 would allow people leaving the Myrtle Beach area an alternative to the bottleneck on U.S. Route 501 and provide additional capacity for evacuees.

Based on the evacuation study results, by providing another route for evacuation, I-73 would reduce clearance times along U.S. Route 501 by over 10 hours (from 37.4 hours to 26.5 hours for a Category 4-5 hurricane). The southbound lanes of I-73 and the Conway Bypass (S.C. Route 22) could also be reversed, allowing more cars to evacuate at the same time. With lane reversal, evacuation time would be reduced by an additional 4 hours along U.S. Route 501 (from 26.5 hours to 22.4 hours) and an additional 10 hours on I-73 (from 29 hours to 18.9 hours).

Without construction of I-73, the evacuation time in 2030 could exceed 37 hours in a worst-case scenario (Category 4-5) on U.S. Route 501. With clearance times this long, the decision to evacuate would have to be made early in the hurricane watch period before the National Hurricane Center has reliable data to make predictions concerning storm track or hurricane intensity. This could result in needless evacuations of residents and tourists, which would hurt the region’s economy. (Note: Based on a major change incorporated into the 2012 South Carolina Hurricane Guide,¹³ voluntary evacuation orders will no longer be made. All future hurricane evacuation orders made by the Governor will be considered mandatory. By eliminating the staged evacuation provided by an initial voluntary evacuation order, more people could be trying to leave the South Carolina coastal area at the same time. Furthermore, if the decision to issue a mandatory evacuation is delayed in an effort to avoid needless evacuations, the additional capacity that would be provided by I-73 would be critical in reducing clearance times and getting people out of harm’s way.)

¹⁰ The cost to construct S.C. Route 22 over 10 years ago was approximately \$386 million. Adjusting for inflation, inclusion of the 24-mile S.C. Route 22 into I-73 would save approximately \$500 million.

¹¹ I-73 Project Team, “Economic development from Interstate Highway Investments,” transmitted via November 8, 2004 memo from Mitchell Metts, SCDOT.

¹² SCEMD, *The South Carolina Hurricane Plan*, June 2003.

¹³ South Carolina Emergency Management Division, *2012 South Carolina Hurricane Guide*.

SC 38/US 501

This route already provides a direct connection between Route 22 and I-95, and is four lanes along its entire length. There are already grade separated interchanges at major crossings, making this route essentially an expressway in its current configuration. For the vast majority of its length, there is a wide median. The following aerial photographs show typical conditions on these corridors.

Route 38 at Gun Swamp Road***US Route 501 at Zion Road***

Further study of this corridor would be needed to determine if additional improvements would be appropriate to improve the corridor operations, such as:

- Construct modern superstreet arterial intersections where needed.
- Conduct access management improvements in areas of frequent curb cuts.
- Construct grade separated interchanges at high volume crossings if needed for traffic capacity.

This alternative would have by far the lowest cost and environmental impacts, and corridor improvements would benefit both local residents as well as travelers headed to the Myrtle Beach area.

The current roads between Myrtle Beach and I-95, such as U.S. Route 501, U.S. Route 378, and S.C. Route 9, are used heavily during the tourist season (which runs from April to September). A 2005 study locating the top summer traffic bottlenecks in the country identified the drive between I-95 and the Myrtle Beach area on U.S. Route 501 in the list of top 25 trips for vacation travel delays and congestion.¹⁴ These bottlenecks were based on information from the FHWA, state departments of transportation, and the travel and tourism industry. The proposed project would enable tourists to access the area more efficiently and provide a high-speed access route to the region. The effect of the future peak day traffic on the local network congestion was also examined. The projected 2030 peak day roadway levels of service for the No-build and the eight Build Alternatives were determined using the SCDOT level of service (LOS) criteria. U.S. Route 501, between U.S. Route 76 west of Marion and S.C. Route 22, is predominantly projected at LOS F during the 2030 peak day No-build scenario.¹⁵ The Preferred Alternative is generally projected to operate at LOS C during the 2030 peak day, with congestion on large segments of U.S. Route 501 improving to LOS C and D under this scenario, as well.¹⁶

¹⁴ AAA, *Are We There Yet? A Report on Summer Traffic Bottlenecks and Steps Needed to Ensure That Our Favorite Vacation Destinations Remain Accessible*, (June 30, 2005).

¹⁵ FHWA/SCDOT, *I-73 Traffic Technical Memorandum, from I-95 to the Myrtle Beach Region* Figure 91, page 135.

¹⁶ FHWA/SCDOT, *I-73 Traffic Technical Memorandum, from I-95 to the Myrtle Beach Region* Figure 94, page 138.

Route 9

This option would require widening of about 30 miles of rural four lane roadway into an expressway, and an additional 30 miles of rural two lane roadway into a four lane expressway. The path would generally follow SC Route 9, but could use local roads for bypass routes around several communities, which could result in up to 4 miles of new expressway construction to avoid impacts to communities. The following aerial photograph shows typical conditions along the rural portions of Route 9.

Route 9 at Long Bay Road (Four Lane Section)



Route 9 at South Fordtown Road (Two Lane Section)



It is possible that at least one grade separated interchange would be needed along this corridor.

I-74 Connector

This route would connect the I- 74 corridor in North Carolina (currently a four lane US highway, but planned for upgrade to an interstate) with SC Route 22 primarily by the upgrade of about 34 miles of two lane rural roadways. In some areas, bypass sections might be appropriate to avoid natural or socioeconomic impacts. The following map shows a potential route for this connection. In general, this corridor is somewhat higher in elevation, so while there would be some wetlands impacts, there would be no need to fragment or disturb significant pristine natural areas.

In areas that were not bypassed, what would the impacts to residences, businesses, and communities be if S.C. Route 9 were widened to four lanes under the Expressway Concept? No quantification of these potential impacts is provided in support of the statements that this concept would result in less impact.

The role of SCDOT is limited to roads within South Carolina. Construction of this I-74 Connector would be reliant on NCDOT to build a section of the roadway, or it would be a “road to nowhere”.

This route seems to follow Green Sea Road (SC 410) in South Carolina, and connects to S.C. Route 22 using U.S. Route 701. Way points were set in the CAT analysis to ensure that an alignment alternative followed this same corridor; however, due to the higher impacts this corridor was eliminated. Based on cursory review of aerial photography, there is a school located at Bakers Chapel Road and U.S. Route 701. In addition, there are numerous businesses, cemeteries, churches, and residences located along the roadway, as well as several farms along the alignment that could be impacted by the upgrade of two-lane rural roadways for those proposed alternatives.

What is the basis for this statement? General conclusions regarding elevation of the overall corridor are insufficient to support statement that this alternative would not fragment or disturb pristine natural areas.

I-74 Connector Route*Transit Service*

Providing a corridor for future rail transit service is also mentioned as a long term goal of the I-73 south project, although no detail or analysis is provided of its feasibility, cost or impacts. AMTRAK service is currently provided to Florence SC, Kingstree SC, and Lumberton NC. There are many potential alternatives to improved transit connections to and within Myrtle Beach that would be far more cost effective than a new rail corridor. A premium, convenient bus service could be provided to meet trains at the AMTRAK station and bring passengers to their destination. Local service that operates for extended hours, nights and weekends, would allow travelers to explore tourist destinations in the area. This could be supplemented by improved bicycle facilities and car sharing services, making Myrtle Beach a great destination for visitors seeking active travel and outdoor experiences. New rail service directly to Myrtle Beach is unlikely to be a cost effective solution to promote transit, and there are many more appealing and cost effective options to meet this goal that have not yet been explored.

Rail transit was referred to in the EIS under multimodal planning as a secondary need. Since the alignment of the Southeast High-Speed Rail (HSR) corridor could come near the ultimate I-73 corridor, this project only seeks to proactively provide for future rail options by preserving a corridor within the proposed I-73 right-of-way.

Comparative Features of the Alternatives for the Grand Strand Expressway

The following table summarizes the basic project components and rough cost levels for Grand Strand Expressway TSM alternatives for the I-73 South project, proposed between I-95 and the Myrtle Beach area.

Project Component	Project Units (miles, units)			Unit Costs	Estimated Project Cost(millions)*		
	SC 38/ US 501	SC 9	I- 74 Connector		SC 38/ US 501	SC 9	I- 74 Connector
Upgrade of four lane arterial to Expressway	42	30	0	\$3,500	\$147,000	\$105,000	\$ -
Upgrade of two lane roadway to expressway	0	30	34	\$7,500	-	225,000	255,000
New Expressway Construction	0	8	2	\$22,000	-	88,000	44,000
Interchanges	0	1	2	\$10,000	-	10,000	20,000
					\$147,000	\$428,000	\$319,000

* Planning level costs based on typical unit costs for projects in North and South Carolina, not based on site specific engineering analysis.

Compare Expressway Alternatives to Proposed I-73

The table below compares the proposed I-73 with the for a Grand Strand Expressway alternatives.

	I-73 (South) as Proposed in EIS	Grand Strand Expressway Alternatives
Design	New Interstate Highway, 44 miles of new construction	Upgrade of existing 2 or 4 lane roads, with bypass sections of new construction where needed
Right of way width	About 300 feet	About 100 feet right of way, which can be accommodated on most existing arterial corridors
Wetlands impacts	Inflexible and excessive interstate highway design criteria result in significant impacts to wetlands areas. Proposed alignment requires crossing of major wetlands and filling	Minimizes wetlands impacts by upgrading existing roadways, many of which need only minor upgrades, and minimizing need to cross wetland areas with new facilities. More flexible expressway design criteria will reduce impact areas where new roadway construction is required.
Posted Speed limit	65 mph	Varies; typically 50 to 65 mph
Cost	\$1,300 million	\$147 to \$428 million
Ability to phase construction	Limited; route will not operate effectively until entire corridor is complete	Route 501 option can easily be phased and will have utility as soon as first phase is constructed. NC and Route 9 options cannot be phased as easily due to limited capacity of existing roadway network

The above table shows the substantial costs savings to South Carolina taxpayers that could result from this approach to addressing the region's transportation needs. In addition, any of these alternatives would result in substantially lower wetlands impacts, habitat fragmentation, and disturbance of pristine natural areas.

Construction on new alignment provides greater flexibility than the widening/upgrade of existing facilities and allows for the avoidance of natural and human environmental impacts. The design is not inflexible. The Reasonable Build Alternatives and subsequently the Preferred Alternative were modified and shifted to avoid and minimize impacts to resources throughout the project development. The Preferred Alternative was shifted to be adjacent to the existing S.C. Route 917 crossing of the Little Pee Dee River based on a consensus vote from the ACT (January 19, 2006) to minimize the number of road crossings of this waterway. With regard to the other major wetland crossings, the Preferred Alternative was shifted to avoid crossing Buck Swamp and to be parallel and immediately adjacent to the existing crossing of Lake Swamp. Thus, both major wetland crossings by the Preferred Alternative avoid further habitat fragmentation.

Widening/improving existing roadways does not allow for the shifting/modification of alignments to avoid natural and human resources.

Although the table on page 11 includes the greater potential impacts to the natural environment (wetlands) associated with construction on new alignment, potential impacts to the human environment are excluded. Based on public involvement throughout the I-73 EIS process, residents, governmental entities, and school districts voiced opposition to alternatives involving the upgrade of existing roadways. Alternatives 1, 4 and 8 each have a segment that crosses the Little Pee Dee River on U.S. Route 501, and then extends around the Galivants Ferry Historic District back along U.S. Route 501 through Aynor to intersect S.C. Route 22. Using U.S. Route 501 through the Town of Aynor and Horry County was opposed (one petition included almost 900 signatures) by those living in the area. Horry County Council in a letter dated March 13, 2006, reported a unanimous vote against the route that crossed at Galivants Ferry and extended southeast along U.S. Route 501 through Aynor. The Town of Aynor voted unanimously (letter dated March 21, 2006) to oppose the route that would be constructed along existing U.S. Route 501 at Galivants Ferry and through Aynor. Letters were also received from the Horry County School Administration (refer to letters dated April 6, 2005, April 12, 2005 and January 27, 2006) that expressed opposition to the segment that would go through Aynor along U.S. Route 501. The SCDNR and USFWS also expressed opposition to this segment.

I-73 could be constructed in phases, as was S.C. Route 31, or all at once like S.C. Route 22. The first phase of I-73 South will be from I-95 to the 301/501 interchange. This will have independent utility, use/value, and functionality when completed.

Furthermore, the ability to phase construction of the Expressway Alternative does not address the constructability issues that are associated with upgrading existing roadway facilities. Throughout Chapter 2 of the FEIS, constructability issues associated with segments of the Build Alternatives that would involve existing roadways, including U.S. Route 501, are considered. Construction impacts to residents are greater with the upgrade of existing alternatives. Temporary detours and closures of facilities could lead to more inconveniences for local residents and travelers throughout the areas of construction. Businesses along these roadways could experience a loss of revenue during construction due to the inconvenience placed on customers to access these businesses. As explained in the I-73 FEIS, the difficulty of building along and within the U.S. Route 501 corridor, and the traffic management problems associated with building there, make them even less attractive alternatives.¹⁷

¹⁷ FHWA/SCDOT, *Interstate-73 FEIS, from I-95 to the Myrtle Beach Region*, p 2-70.

Response: The land at the proposed interchanges is primarily owned by local individuals and families. Even if only “large, national operations” purchased this land and located businesses at the interchanges, they still would provide jobs and wages for local residents.

The statement from the Miley Report also indicates that by upgrading SC 38/ US 501 the existing adjacent businesses would remain in place. This is difficult to reconcile with the claimed travel efficiency earlier in the report (page 12 of the Miley report) . Maintaining all existing businesses would also maintain the current traffic entering and leaving these businesses , which would have a negative effect on the traffic movement and on safety on the GSX compared to a controlled access facility like I -73. The GSX efficiency increases are limited when numerous points of ingress and egress are maintained along the alignment. One of the benefits to an interstate is the control of access that allows for higher travel speeds without traffic stopping to turn off the facility or seeking to enter the facility except at an entrance ramp. This also provides for safer travel by minimizing conflicts between through traffic and traffic entering and exiting the main line.

This statement from the Miley Report also presumes that no residences or businesses would be impacted by the proposed GSX. Given that it appears no level of analysis has been performed regarding the potential of right -of-way takings from existing properties to provide for the GSX, this assumption cannot be considered accurate.

Funding Issues - page 20, Miley report.

1st paragraph

While the \$1.3 billion for I-73 has not been secured, if it was, it could supplant other state transportation infrastructure needs that are a higher priority – especially since improved access to the Grand Strand could be achieved by the GSX at one-tenth the cost.

Response: The “improved access” referred to as being provided by “GSX” has been hypothesized, but has not been demonstrated or substantiated in any documentation that has been provided to date. As indicated by the documentation developed through the more than three-year NEPA process and contained within the EISs and associated Technical Memoranda, access to and from Myrtle Beach would be made much more efficient with the construction of I-73.

**Review of Aerial Photographic Analysis Comparing Aquatic Impacts of S.C. 38/U.S. 501
Upgrade With Proposed I-73
(Environmental Research, Inc.)**

This review is in response to comments received from the Southern Environmental Law Center and Coastal Conservation League in the form of a report entitled, *Aerial Photographic Analysis Comparing Aquatic Impacts of S.C. 38/U.S. 501 Upgrade with Proposed I-73, Dillon, Marion, & Horry Counties, South Carolina*, prepared in March 2012 by Environmental Research, Inc. The Environmental Research, Inc., report is referenced by page and paragraph throughout this review.

STATEMENT 1: Executive Summary, Page 3, Paragraph 2

The report, which relies on aerial photographic analysis and other available documentation as described, quantifies the wetlands that would be impacted by an upgrade to an interstate or expressway for portions of S.C. 38 and U.S. 501 between I -95 and the Conway Bypass (S.C. 22). Using either a three -hundred-foot wide footprint, or a two-hundred-foot wide footprint, the analysis demonstrates that the number of wetland acres that would be impacted by upgrading the existing highway corridor would be significantly less than the amount of wetlands that would be impacted by the new interstate highway, I-73, at the location proposed by SCDOT.

SCDOT RESPONSE 1:

The aerial photographic analysis methodology used is a valid approach to identifying wetlands and other aquatic resources. While developing the alternatives for I-73, 2005 false-color infrared aerial photography was used to analyze these resources along the S.C. 38/U.S. 501 corridor. During the evaluation of the S.C. 38/U.S. 501 corridor, the aerial photography review was augmented with review of USGS topographic maps and NRCS soil maps. Through this process, a GIS wetland data layer was produced initially based upon the National Wetland Inventory (NWI) maps as base mapping. Through the aerial photography review process, areas indicated as wetland on the NWI base maps that had been previously filled for development were removed. Areas that were indicated as wetland on the NWI map, but did not exhibit typical wetland signatures on the aerial photography were noted for further investigation. Conversely, areas exhibiting typical wetland signatures on the aerial photography but not included in the NWI mapping were also noted.

Unlike the aerial photography analysis performed by Environmental Research, Inc., field visits were then conducted and the areas that were identified during the aerial photography review were ground-truthed. The presence or absence of wetland hydrology, hydrophytic vegetation,

and hydric soils, in accordance with the methodology in the *1987 Corps of Engineers Wetlands Delineation Manual*¹, was used to confirm wetlands in the field. Any areas that met the basic criteria as wetlands were not altered on the mapping. Notes were recorded at the locations that were field checked and the project wetland map was revised to reflect existing conditions. Likewise, areas that were identified as upland on the NWI map, but were found to meet the criteria as wetland, were revised on the wetland maps accordingly. A copy of the updated wetland map was provided to the USACE for review. Site visits were conducted with the USACE to field verify areas selected by the USACE as well as those questioned by some members of the Agency Coordination Team (ACT). As a result of the field visit, modifications to the wetland map were finalized. At the point that we evaluated the preliminary alternatives, we quantified potential impacts within a 600 -foot wide corridor and only evaluated the SC 38 /US 501 corridor for an interstate facility.

It should be noted that the Environmental Research, Inc., report is comparing wetlands identified by remote sensing methods wetlands that were delineated in the field and approved by the USACE.

The Upgrade Alternative evaluated in the Environmental Research, Inc., report is presumably based on the Grand Strand Expressway alternative evaluated by Smart Mobility², and is not a comparable facility to the proposed interstate. It is not our intent to debate an interstate facility versus an upgrade of existing roadways here as we have already addressed this issue in our response to the Smart Mobility report, except to reiterate that an interstate is more efficient for moving traffic and is safer than an expressway facility. Roadway facilities other than an interstate would have to accommodate business and residential driveways and at -grade intersections that would lower the travel speed. This degree of access and creates less safe situations due to vehicles accessing the road from driveways and side roads. An interstate would have controlled access which would allow higher posted speed limits and reduce the conflicts between vehicles on the mainline and other vehicles entering or leaving it. driveway access poses. An interstate facility would also address local traffic congestion and improve hurricane evacuation.

Because a typical section or design criteria for an expressway upgrade has not been provided in the Environmental Research, Inc., or Smart Mobility reports, it is not possible to determine if a 200-foot wide corridor would be of sufficient width to construct an expressway facility. The mainline of the proposed I-73 has a 300 -foot wide right-of-way with a construction footprint ranging from 233 to 263 feet in width where no frontage roads are required, which is consistent

¹ U.S. Army Waterways Experimental Station Environmental Laboratory, *Corps of Engineers Wetlands Delineation Manual* (Washington, D.C.: Department of the Army, U.S. Army Corps of Engineers, 1987) Technical Report Y-87-1; (33 CFR §328.3[b]) and USEPA (40 CFR §230.3[t])

² Smart Mobility, *The Grand Strand Expressway, An Alternative to the Proposed I-73 to the Myrtle Beach, SC area*, March 25, 2011.

with the 300-foot corridor for an interstate referenced in the Environmental Research, Inc., report. However, a 300-foot wide corridor would not be a sufficient width to accommodate frontage roads needed for access to the residences and businesses located along existing S.C. 38/U.S. 501. In order to provide access to these properties frontage roads required would involve a wider right of way and construction footprint, and would require the relocation of homes and businesses. For example, on sections of the I-73 southern alignment where one frontage road is required, the right-of-way ranges from 361 feet to 440 feet wide with a construction footprint ranging from 312 to 357 feet in width. The right of way along the section of I-73 that has frontage roads on both sides is 465 feet wide with a construction footprint width of 424 feet. The existing right-of-way along S.C. 38 and U.S. 501 ranges from approximately 90 feet in width through Aynor to approximately 180 feet in the rural areas. Therefore, it is likely that the 118.9 acres of wetland impact for a 300-foot wide interstate upgrade to the existing facilities is a gross underestimation. Additionally, there is no consideration in the report of impacts that would be associated with the construction of interchanges with existing roads that would be required for an interstate facility.

STATEMENT 2: Executive Summary, Page 3, Paragraph 3

According to the permit application submitted to the Department of the Army and the South Carolina Department of Health and Environmental Control by the SCDOT for a permit to place fill associated with the construction of a new four-lane interstate roadway, 313 acres of wetlands would be impacted by this segment of the proposed new location I-73. By contrast, upgrading the existing corridor would impact approximately 119 acres of wetlands based on a three-hundred-foot wide footprint and approximately 50 acres of wetlands based on a two-hundred-foot wide footprint.

<i>Acres of wetlands impacted by Interstate 73 proposed route</i>	<i>313</i>	<i>Acres of wetlands impacted by a 300' wide upgrade route</i>	<i>118.9</i>	<i>Acres of wetlands impacted by a 200' wide upgrade route</i>	<i>49.5</i>
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According to the permit application submitted by the SCDOT, 13 perennial streams totaling 3,155 linear feet and 9 intermittent streams totaling 705 linear feet would be disturbed by the proposed new location I-73 between I-95 and the Conway Bypass. This equates to 22 stream crossings totaling 3,860 linear feet of stream disturbance. Twenty-four perennial and 12 intermittent streams were identified using both aerial photographs and U.S. Geological Survey topographic maps along the existing route for the upgrade alternative. Exact linear footage of additional impacts would depend on the upgrade design, but the corridor is already a divided four-lane highway. Consistent with the wetland impacts, it is reasonable to conclude that there would be significantly less disturbance to streams by adding a minimal amount of additional linear footage to these

already-impacted streams by upgrading the existing corridor compared to the disturbances that would occur to twenty-two new stream crossings if I-73 were to be constructed.

<i>Number of new stream crossings impacted by Interstate 73 proposed route</i>	<i>22</i>	<i>Number of new stream crossings impacted by upgrade route</i>	<i>0</i>
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SCDOT RESPONSE 2:

The Environmental Research, Inc., report incorrectly states the wetland impacts associated with the I-73 roadway from I-95 to the Conway Bypass. Permanent impacts to both jurisdictional and non-jurisdictional wetlands for this segment total 292.44 acres of which 1.04 acres are non-jurisdictional wetlands and 1.25 acres are jurisdictional ditches. Of the 292.44 acres of wetland impacts, 45.95 acres consist of temporary construction impacts, leaving 246.49 acres of permanent fill and clearing impacts.³ There is no indication that temporary construction impacts were considered in the Environmental Research, Inc., report.

The Environmental Research, Inc., report also incorrectly states the stream impacts associated with the I-73 southern alignment. There are 20 stream crossings (12 perennial and 8 intermittent), 15 of which will result in impacts. Five of the crossings will be on structure (three perennial and two intermittent) and therefore will not be impacted by the project. It should be noted that four of the stream crossings will occur immediately adjacent to existing road crossings. The total stream impacts for the I-73 southern alignment would be 4,571 linear feet (3,075 perennial and 1,496 intermittent).⁴

STATEMENT 3: Page 6, last paragraph

In addition, it should be noted that the aquatic resources within the footprint of the upgrade alternative have already been impacted in a number of ways along the corridor. For example, wetland water regimes (duration of inundation or soil saturation) have been reduced due to the construction of drainage ditches and impoundments. These impacts were the result of both the original highway construction and follow-on highway improvements, as well as common practices used to increase the acreage of land that could be utilized for agriculture. Further, reductions in the way water moves through many of the wetlands adjacent to the highway (wetland connectivity) have been significantly impacted. Causeways constructed to reduce the length of the bridges

³ Information from the Impact Assessment Form and drawings contained in the I-73 Section 404 permit application.

⁴ Ibid.

crossing the floodplain have already impacted the larger wetlands in the Little Pee Dee River floodplain. Therefore, the Little Pee Dee River floodplain, which would be significantly impacted by the I-73 proposal, would experience minimal additional impacts to wetlands if the alternative were chosen due to the upgrades that have already been performed on this section of the route and the size of the highway footprint that already exists along this portion of U.S. 501.

SCDOT RESPONSE 3:

We agree with the premise that crossing wetlands at locations where they have been previously impacted would result in minimal new impacts. As discussed in the I-73 South EIS, many of the wetlands and streams within the study area were previously impacted by agriculture and silviculture practices, and based on a review of aerial photography, riparian wetland systems within the study area contain many existing railroad, roadway, and utility crossings.⁵ When developing the preliminary build alternatives, a GIS based Corridor Analysis Tool (CAT) was used in conjunction with 52 various data layers to identify potentially suitable corridors for further analysis. The ACT selected layers and assigned numerical values, on a scale of one to ten (ten representing the most valuable feature to avoid), to each feature within the 52 data layers.⁶ It should be noted that existing principle arterial roadways were given the lowest value of one so they would be favored by the CAT. As described above, a modified NWI data layer was used to identify wetlands within the study area. Wetlands that were previously impacted were identified by the modifiers associated with the NWI Cowardin classifications and through aerial photography interpretation. Each wetland type was given a value, as decided by the ACT, and intact Carolina bays were designated as constraints so the CAT could not put an alignment through them. Previously impacted wetlands were given lower values so that if wetlands must be crossed, it would be favored to do so in a previously impacted area. The CAT avoided high quality wetlands based on the value assigned by the ACT. Every effort was made to avoid and minimize impacts to high quality wetlands during the alternative development process.

As stated above, crossing wetlands at locations where they have been previously impacted would result in less new impacts, which is why the proposed Preferred Alternative crossing of the Little Pee Dee River and its associated wetlands is immediately adjacent to the existing S.C. 917 crossing and the Lake Swamp crossing is immediately adjacent to the existing Nichols Highway crossing. Not only does this alignment minimize wetland impacts at these crossings, but it also avoids further fragmentation of the riparian habitats at these locations.

⁵ Information from Section 3.12.4 of the *Interstate I-73 FEIS: I-95 to the Myrtle Beach Region*, pages 3-146 to 3-153.

⁶ Information from *Alternative Development Technical Memorandum, from I-95 to the Myrtle Beach Region*.

The 100 -year floodplain of the Little Pee Dee River along the proposed I -73 alignment is approximately 3.2 miles wide and approximately 3.1 miles wide at the US 501 crossing (refer to attached Figure 3-29 from the I-73 South FEIS). The difference between impacts to the 100-year floodplain at these two crossings is negligible.

STATEMENT 4: Pages 7 through 8

The conclusions in this report are illustrated in the following figures, which are described below in sequence.

FIGURE 1:

Figure 1 is a mosaic of the Florence and Kingstree 1:100,000 -scale United States Geological Survey topographic maps. This figure depicts both the approximate location of the SCDOT's proposed route I -73 as a new location interstate highway closely paralleling the alternative existing route which could be upgraded along portions of S.C. 38 and U.S. 501 between Interstate 95 and S.C. 22. This figure also contains summary tables containing information on the differences in wetlands and stream impacts between the proposed route for I-73 and the alternative route, which is discussed in greater detail throughout this report.

FIGURE 2:

Figure 2 is a mosaic of the Florence and Kingstree 1:100, 000-scale United States Geological Survey topographic maps. This figure depicts the locations of the three sections along the alternative route (the Marion Bypass, the Little Pee Dee River floodplain, and the remaining section of the study area which consists of three additional, non-contiguous, portions of highway) discussed for ease of understanding the conclusions in this report. It also includes again the approximate location of the SCDOT's proposed route for a new location interstate highway.

FIGURE 3:

Figure 3 and the following figures utilize a mosaic of aerial photographs taken at various times during the leaf -off season in early 2010. These figures illustrate comparisons between the landscapes of the proposed route for the new interstate highway and that of the proposed alternative utilizing existing portions of S.C. 38 and U.S. 501, located between Interstate 95 and S.C. 22. This figure depicts the Marion Bypass along the alternative route with the approximate location of this section of the proposed new interstate to the east. The Marion Bypass has 31.2 acres of wetlands that lie within the three -hundred-foot wide footprint of the existing highway and 2.4 acres of wetlands that lie within the two-hundred-foot wide footprint.

Within this report there are no breakouts of wetland acreages that are impacted by comparable sections of the proposed new interstate highway, such as the Little Pee Dee River floodplain, due to the unavailability of those statistics in the permit application for I-73.

FIGURE 4:

Figure 4 depicts the Little Pee Dee River floodplain along the upgrade route with the approximate location of this section of the proposed new interstate to the east. The Little Pee Dee River floodplain has 37.9 acres of wetlands that lie within the three-hundred-foot wide footprint of the existing highway and 35.1 acres of wetlands that lie within the two-hundred-foot wide footprint.

This figure illustrates that a much greater extent of the Little Pee Dee River floodplain would be impacted by the proposed new interstate highway than by the existing route due to the greater width of the floodplain along the proposed I-73 location and the additional crossing of the Lake Swamp tributary of the Little Pee Dee River to the south.

FIGURE 5:

Figure 5 depicts the remaining section of the study area which consists of the three additional, non-contiguous, portions of highway. These additional portions of the study area (referred to as Other Areas in Figure 2) are located north of the Marion Bypass terminating at Interstate 95, south of the Marion Bypass terminating at the Little Pee Dee River floodplain, and south of the Little Pee Dee River floodplain terminating at S.C. 22. The three additional, non-contiguous, portions of highway have a combined total of 49.8 acres of wetlands that lie within the three-hundred-foot wide footprint of the existing highway and 12 acres of wetlands that lie within the two-hundred-foot wide footprint. These portions of the upgrade alternative route are those that have received the least amount of upgrades to date.

SCDOT RESPONSE 4:

Regarding Figures 1 through 5 contained in the Environmental Research, Inc., report, the corridor for the proposed I-73 location is greatly simplified and incorrectly shown on these figures. While Environmental Research, Inc., did not quantify impacts associated with the I-73 utilizing the alignment indicated on these figures, the inaccurate depiction of the alignment could give a false impression of the actual impacts to a reviewer that is not familiar with the I-73 project. The alignment shown is wrong for the segment between U.S. 501 southeast of Latta and S.C. 41 southeast of Mullins. These figures show I-73 crossing three Carolina bays, which it does not, and incorrectly shows the Little Pee Dee River crossing approximately 0.9-mile southwest of the actual proposed crossing, which is immediately adjacent to SC 917. Comparison of the attached Figure 3-29 from the I-73 South FEIS to the figures in the Environmental Research, Inc., report illustrates the error in the alignment of I-73 relative to several Carolina bays in the vicinity of the proposed interchange of I-73 and S.C. 41 southwest of Mullins and the Little Pee Dee Crossing. Figure 3-29 is available to the public and can be found at http://www.i73insc.com/download/impactstudy_southern/Chapter-3-Part-7.pdf.

The Environmental Research, Inc., report states that “Within this report there are no breakouts of wetland acreages that are impacted by comparable sections of the proposed new interstate

highway, such as the Little Pee Dee River floodplain, due to the unavailability of those statistics in the permit application.” This is incorrect. Impacts for the proposed I-73 project (fill, excavation, and temporary/permanent clearing) were depicted on the Charleston District, Corps of Engineers, Joint Public Notice (SAC 2008-1333-DIS) dated January 26, 2011. The permit drawings (Sheets 110 through 121 of 178) indicating each impacted wetland, with impact acreages, were included in the Public Notice. Additionally, a copy of the entire permit application, which includes the SCDOT’s Impact Assessment Form with this information, is available from the USACE upon request.

STATEMENT 5: Page 9, Paragraph 3

The process of photographic analysis involves the visual examination and comparison of many components of the photographic image. These components include tone, color, texture, shape, size, pattern, and landscape context of the individual elements of a photograph. The analyst identifies features and “signatures” associated with specific environmental conditions. The term “signature” refers to a combination of components and/or characteristics that indicate a specific condition or pattern of environmental significance. Academic and professional training, photo-interpretation experience gained through field reconnaissance comparing aerial photographic signatures with ground observations, repetitive observations of similar features or activities, and the deductive logic of the analyst as well as background information from collateral sources are all critical factors employed in a photographic analysis.

SCDOT RESPONSE 5:

The SCDOT agrees that, as stated in the Environmental Research, Inc., report, field reconnaissance comparing aerial photographic signatures with ground observations is a critical factor employed in a photographic analysis. However, the report does not indicate that any field reconnaissance was done for this report.

As detailed in SCDOT Response 1, during the I-73 wetland analysis effort, areas identified as wetlands on the NWI map that did not exhibit typical wetland signatures on the aerial photography, as well as those exhibiting typical wetland signatures but not included in the NWI mapping, were identified as questionable. Field visits were then performed and the questionable areas were ground-truthed. During the field visits, notes were taken at the locations that were verified and the project wetland map was revised to reflect existing conditions. A copy of the updated wetland map was provided to the USACE for review. Site visits were then performed with the USACE to field verify areas selected by the USACE, as well as those along the U.S. 501 corridor that were questioned by some members of the ACT.

This photographic analysis and field review effort for I-73 was conducted by staff members with a combined 45 years of experience at photointerpretation, explicitly involving wetland analysis.